

REMARKS

Entry of the foregoing and reconsideration of the application identified in caption, as amended, pursuant to and consistent with 37 C.F.R. §1.111 and in light of the remarks which follow, are respectfully requested.

By the above amendments, claim 35 has been amended to recite an anti-corrosion and anti-metal sulfide scale formulation consisting essentially of a tetrakis (hydroxyorgano) phosphonium salt, a primary, secondary or tertiary alcohol having an acetylenic bond in the carbon backbone, and an ammonium salt. Support for such amendments can be found in the instant specification at least at page 1, lines 8-12, taken in connection with the examples. Claims 35, 38 and 47 have been amended for readability purposes by replacing the term "THP⁺" with "tetrakis (hydroxyorgano) phosphonium". Claims 50-52 have been amended for readability and/or clarification purposes. Claims 56 and 57 have been canceled without prejudice or disclaimer.

In the Official Action, claims 35-38 and 43-57 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite. Applicants respectfully submit that the meaning of the term "THP⁺" recited in the claims, is clear from the instant specification, for example, at page 1, line 5. As noted above, claims 35, 38 and 47 have been amended for readability purposes by replacing the term "THP⁺" with "tetrakis (hydroxyorgano) phosphonium". Accordingly, withdrawal of the §112, second paragraph, rejection is respectfully requested.

Claims 35-38 and 43-55 stand rejected under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 6,926,836 (*Fidoe et al*) in view of U.S. Patent No.

6,192,987 (*Funkhouser et al*). Withdrawal of this rejection is respectfully requested for at least the following reasons.

Independent claim 35 recites a method for the treatment of an aqueous system containing or in contact with a metal sulfide scale while concomitantly inhibiting the corrosion of surfaces in contact with said aqueous system, said method comprising: adding to said aqueous system a scale and corrosion inhibiting amount of an anti-corrosion and anti-metal sulfide scale formulation consisting essentially of a tetrakis (hydroxyorgano) phosphonium salt, a primary, secondary or tertiary alcohol having an acetylenic bond in the carbon backbone, and an ammonium salt.

Fidoe et al relates to the use of a mixture of THP or a THP salt and an amino carboxylate or amino phosphonate chelant to inhibit, prevent, reduce, dissolve or disperse deposits of a metal sulphide in aqueous systems. See col. 2, lines 35-38.

Fidoe et al does not disclose or suggest each feature recited in independent claim 35. For example, *Fidoe et al* does not disclose or suggest adding to said aqueous system a scale and corrosion inhibiting amount of an anti-corrosion and anti-metal sulfide scale formulation consisting essentially of a tetrakis (hydroxyorgano) phosphonium salt, a primary, secondary or tertiary alcohol having an acetylenic bond in the carbon backbone, and an ammonium salt, as recited in claim 35. *Fidoe et al* has no disclosure or suggestion of the recited formulation consisting essentially of a tetrakis (hydroxyorgano) phosphonium salt, a primary, secondary or tertiary alcohol having an acetylenic bond in the carbon backbone, and an ammonium salt. In this regard, the Patent Office has acknowledged that *Fidoe et al* fails to disclose or suggest the use of a primary, secondary or tertiary alcohol having an acetylenic bond in the carbon backbone. See Official Action at page 2.

Funkhouser et al relates to a metal corrosion inhibiting composition which includes one or more acetylenic alcohols and hexamethylenetetramine. See col. 2, lines 58-60. *Funkhouser et al* discloses that acetylenic alcohols are expensive and their use at high temperatures, i.e., temperatures in the range of from about 180°F to 350°F has been limited by the high concentrations of acetylenic alcohols needed to achieve the desired corrosion protection. See col. 3, line 64 to col. 4, line 1.

Funkhouser et al also discloses that the presence of a small amount of the relatively inexpensive hexamethylenetetramine with acetylenic alcohols dramatically improves the performance of the acetylenic alcohols in reducing corrosion and enables the use of the acetylenic alcohols at lower concentrations and/or higher temperatures than when the acetylenic alcohols are utilized by themselves. See col. 2, lines 60-66.

Funkhouser et al further discloses that the hexamethylenetetramine also functions as a sulfide scavenger whereby the formation of free sulfur or the formation of ferrous sulfide precipitate are prevented. See col. 2, line 66 to col. 3, line 2.

Funkhouser et al fails to cure the above-described deficiencies of *Fidoe et al*. In this regard, the Patent Office has relied on *Funkhouser et al* for disclosing the use of an acetylenic alcohol in a corrosion inhibiting composition. Specifically, the Examiner has alleged that "It would have been obvious to one skilled in the art to modify the method of *Fidoe et al*. by including the recited alcohol in the formulation in view of the teachings of *Funkhouser et al*., to aid in inhibiting corrosion in the aqueous system." See Official Action at page 2. However, it is important to note that *Funkhouser et al* teaches the criticality of the **combined use** of hexamethylenetetramine with an acetylenic alcohol for improving corrosion inhibition performance and for enabling high temperature use:

The presence of a small amount of the relatively inexpensive hexamethylenetetramine with acetylenic alcohols dramatically improves the performance of the acetylenic alcohols in reducing corrosion and enables the use of the acetylenic alcohols at lower concentrations and/or higher temperatures than when the acetylenic alcohols are utilized by themselves. [Col. 2, lines 60-66.]

The improved corrosion inhibiting compositions of this invention are based on the discovery that when hexamethylenetetramine is added to one or more acetylenic alcohols, the performance of the acetylenic alcohols as corrosion inhibitors is dramatically improved. [Col. 4, lines 1-5.]

Quite clearly, *Funkhouser et al* emphasizes the importance of employing hexamethylenetetramine together with acetylenic alcohol in order to achieve improved corrosion inhibition performance and to enable high temperature use, in its composition. In view of such teachings, it would not have been obvious to the ordinarily skilled artisan to employ the acetylenic alcohol disclosed by *Funkhouser et al*, in a corrosion inhibiting composition apart from hexamethylenetetramine, which *Funkhouser et al* teaches is critical to improving corrosion inhibition performance and enabling high temperature use.

As noted above, independent claim 35 has been amended to recite that the anti-corrosion and anti-metal sulfide scale formulation consists essentially of the recited components. Thus, even if the ordinarily skilled artisan would have employed the acetylenic alcohol and hexamethylenetetramine disclosed by *Funkhouser et al* in the *Fidoe et al* mixture, the resulting combination does not correspond to the recited formulation which consists essentially of a tetrakis (hydroxyorgano) phosphonium salt, a primary, secondary or tertiary alcohol having an acetylenic bond in the carbon backbone, and an ammonium salt. Claim 35 excludes hexamethylenetetramine from such recited formulation.

For at least the above reasons, it is apparent that independent claim 35 is non-obvious over *Fidoe et al* and *Funkhouser et al*. Accordingly, withdrawal of the above §103(a) rejection is respectfully requested.

Claims 56 and 57 stand rejected under 35 U.S.C. §103(a) as being obvious over *Fidoe et al* in view of U.S. Patent No. 5,606,105 (*Davis et al*). This rejection is moot in light of the above cancellation of claims 56 and 57. Accordingly, withdrawal of the rejection is respectfully requested.

The dependent claims are allowable at least by virtue of their direct or indirect dependence from independent claim 35. Thus, a detailed discussion of the additional distinguishing features recited in the dependent claims is not set forth at this time.

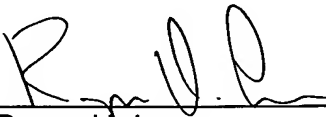
From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order, and such action is earnestly solicited. If there are any questions concerning this paper or the application in general, the Examiner is invited to telephone the undersigned.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

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